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ABSTRACT

A preliminary analysis of the impact of the seven-period school day found that a seven-period schedule allows small high schools in Montgomery County, Maryland to offer almost as many courses as larger six-period schools and allows their students to enroll in more courses, particularly in academic areas. It further concluded that students took advantage of expanded offerings, with the number of sections of academic courses increasing by 7 percent. This later analysis confirms but qualifies the former findings. In both six- and seven-period day schools, total course offerings decreased slightly from 1981-82 to 1982-83, but seven-period schools added academic courses. Despite school enrollment declines, course enrollment increased in both types of schools, growing 11.7 percent in seven-period schools. Both "academic" and "non-academic" departments in seven-period schools gained enrollment, with increases of over 2,500 students in business, home economics, and industrial arts, and over 1,000 in physical education, art, foreign languages, social studies, mathematics, and science. In six-period schools, however, only mathematics gained over 1,000. Students used seventh periods to acquire vocational and life skills as well as to add academic courses. The seven-period day affected 10th and 11th graders' course selections, but not those of 12th graders. The seven-period day affected students of all achievement levels equally; the shift toward taking a slightly greater proportion of nonacademic courses was similar for both high and low achievers. (MCG)

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ANALYSIS OF THE IMPACT OF THE SEVEN-PERIOD DAY

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EA 017 150

Department of Educational
Accountability

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BACKGROUND

In November, 1982, DEA conducted a preliminary analysis of the impact of the seven-period day. This report was based on the only data available at that time, the Class Size Report, and it was provided in the form of a memo entitled "The Study of Senior High Alternative Scheduling Systems: A Preliminary Report on Course Offerings and Selections," which was transmitted to the Board of Education on December 14, 1982.

The major findings reported in that memo were that in the schools in which the seven-period day was initiated:

1. The number of courses which were offered to students had risen to approximately the same level as the number of courses offered in six-period day schools, despite the fact that the latter schools were 45 percent larger.

2. The number of sections of academic courses were up 7 percent, compared to an increase of 1 percent in the six-period day schools; and the number of sections of nonacademic courses were down 7 percent, compared to a decline of 15 percent in the six-period day schools.

3. There was little effect on the number of academic or nonacademic courses scheduled as singletons, or on the number of new courses offered.

Based on these findings, the report concluded that the seven-period schedule

> "...enables high schools with smaller enrollments to offer a schedule of course offerings comparable to that of the larger high schools and that to a great extent pupils are taking advantage of this facility by enrolling in more courses. It is also important to note that the greatest increases in course selection are in academic areas."

However, the memo also contained a very strong disclaimer statement which was underlined on page 2:

> "Several cautions are advised in interpreting the data presented in this report. The data were obtained from the Distribution of Class Sizes and Subjects Within Schools Report provided by DMICS and the extent to which they are correct and/or complete has not been validated by school-based personnel nor school master schedules. Further, these data are descriptive only and suggest no statistical relationships nor inferences."

Although not specifically promised in the preliminary report, DEA verbally assured you and staff from the County Council that an updated and more detailed report would be provided on this topic once the actual student enrollment data were fully analyzed.

It was noted on those occasions that we felt that this additional step was necessary due to known anomalies in the Class Size Report such as the fact that when multiple courses are taught in the same section (e.g., a teacher serving Typing II and Typing III students in the same room at the same time), the Class Size Report picks up only the course name of the course in which the largest number of students in that section are assigned, and then counts all of the students signed up for that section as being enrolled in that course, despite the fact that many of them are actually enrolled in other courses (e.g., Typing III instead of Typing II).

We have now produced a new and more detailed analysis of the impact of seven-period scheduling which is based mainly on data contained in the Report Card Files for the 1982-83 and 1981-82 school years. Because the data in the Report Card File are more detailed than the data in the Class Size File, and do not suffer from the kind of anomalies described above, we believe this new report to be more accurate and useful.[1]

MAJOR DIFFERENCES

As one would hope, the basic findings of both analyses are similar. Like the former study, this study also showed that installing a seven-period day in comparatively small high schools permits them to approach the same number of courses given within the school building as much larger schools have been providing without a seven-period day.

However, where the reports differ is mainly in the area of course offerings. The former study showed courses in the departments traditionally labeled "academic" -- English, History/Social Studies, Foreign Languages, Mathematics, and Science -- to be the primary beneficiaries of increased enrollments in the seven-period-day schools. This new analysis indicates that, in addition to these departments benefiting from the seven-period day, the benefits extended to a much wider variety of departments including Business, Home Economics, Art, Industrial Arts, and Health/Physical Education/Driver Education. It is in a way unfortunate that MCPS has persisted, for many years, in labeling courses in these departments as being "nonacademic," since many of the courses thus labeled demand at least as much intellectual effort as those in departments which benefit from the "academic" rubric. Lest anyone doubt this, let them try to "coast" through an accounting course.

Thus, while Law, Algebra 1, Consumer Math, Computer Math, and Anatomy & Physiology all showed sharp increases in enrollments, so did Exploring Business Courses, Typing, Accounting, Fundamentals of Art, Mechanical Drawing I, Child Development, and...yes...Gourmet Foods 1 and Creative Foods.

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1. It must be pointed out that because of the timing of this analysis, there are some differences in the data for the two years. Of particular relevance here is the fact that, unlike the 1981-82 data, the 1982-83 data may not reflect all course withdrawals or changes which may eventually take place before the end of this semester.

In fact, if there is a pattern to the increased enrollments, it seems to be centered in highly applied areas which are relevant to our changing world, rather than having an "academic" vs. "nonacademic" type orientation. A detailed examination of the course listings provided in Exhibit 5, later in this report, will bear this out.

DETAILED FINDINGS FROM NEW STUDY

Number of Different Courses Provided

Analyses of the number of different courses provided indicate that between the 1981-82 and 1982-83 school years, both six- and seven-period schools slightly decreased[2] the number of different courses provided during the first semester, with the six-period schedule decreasing by 6.3 courses and the seven-period schedule decreasing by 2.6 courses. As a result, the gap between the six- and seven-period schools in number of courses offered narrowed from six in the 1981-82 school year to three in the 1982-83 school year.

Further, while the six-period schools showed a decrease in both academic and nonacademic courses provided, the seven-period schools showed a decrease only in nonacademic courses. Academic courses increased slightly between the two years with the seven-period schools providing on average .6 more academic courses in the 1982-83 school year than they had in the 1981-82 school year (Exhibit 1).

EXHIBIT 1

Changes in Numbers of Different Courses Offered Between 1981-82 and 1982-83 For Six- and Seven-Period Schools: First Semester Only

	Type of Course					
	Academic		Nonacademic		Total	
	N	%	N	%	N	%
Six-Period	-2.6	(-3.6)	-3.6	(-4.3)	-6.2	(-3.9)
Seven-Period	.6	(.9)	-3.1	(-3.8)	-2.6	(-1.7)

2. It was not possible, given the nature of extant data and the schedule for this analysis, to provide comparative data for the full school year from the Report Card File. These data are taken from a more detailed version of the scheduling data and cover only one semester.

Enrollment Patterns

Despite school population declines of 3.5 percent[3] in the six-period schools and 5.2 percent in the seven-period schools, combined course enrollment for the two semesters of the 1982-83 school year increased in both types of schools, with the increases being 1 percent in six-period schools and 11.7 percent in seven-period schools. Adjusted for these population drops, the increases in course enrollments were 4.5 percent for the six-period schools and 16.9 percent for the seven-period schools (Exhibits 2a and 2b).

Exhibits 3 and 4 show in which departments these changes in enrollments occurred. These data show that increases in enrollments in the seven-period schools are broad based, affecting many different academic and nonacademic areas.

Enrollment increases of more than 2,500 students were found for Business (4,392 students), Home Economics (2,579 students), and Industrial Arts (3,121 students).

Increases in enrollments of over 1,000 students were found in Physical Education (1,815 students), Art (1,636), Foreign Languages (1,480 students), Social Studies (1,320 students), Mathematics (1,402 students), and Science (1,365 students).

In contrast, in the six-period schools only mathematics showed an increase of at least 1,000 students, with math course enrollments increasing by 1,224 students.

If there is a pattern to these data, it is that students seem to be using the seventh period to acquire skills related to more effective functioning in business and home settings and to increase their vocational opportunities, as well as take additional academic courses.

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3. Corrected from original figure of 1.8%.

EXHIBIT 2a

Overall Changes in Course Enrollments 1981-82 Compared to 1982-83:
Six-period Schools

	Enrollment 1981	1982	Difference	%	Adj.[3]* %
Total	148,233	149,649	1,416	1.0	4.5
Academic[1]	107,268	109,193	1,925	1.8	5.3
Nonacademic[2]	40,965	40,456	-506	-1.2	2.3

EXHIBIT 2b

Overall Changes in Enrollments 1981-82 Compared to 1982-83:
Seven-period Schools

	Enrollment 1981	1982	Difference	%	Adj.[3] %
Total	181,183	202,404	21,221	11.7	16.9
Academic[1]	124,848	130,304	5,456	4.4	9.6
Nonacademic[2]	56,335	72,100	15,765	28.0	33.2

1. Includes English/ESOL, Foreign Languages, Social Studies, Mathematics, and Science.

2. Includes Business, Home Economics, Industrial Arts, Art, Music, Theatre, Physical Education, Driver Education, Health, Interns, Other.

3. Adjusted for demographic enrollment decline.

*Corrected from original figures using revised enrollment estimate.

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EXHIBIT 3

Changes in Enrollments by Department: Seven-period Schools

Department	Enrollment 1981	Enrollment 1982	Difference	Percentage	Adjusted Percentage
English	35,879	35,768	-111	-.3	4.9
Foreign Languages	11,538	13,018	1,480	12.8	18.0
Social Studies	27,863	29,183	1,320	4.7	9.9
Mathematics	25,640	27,042	1,402	5.5	10.7
Science	23,928	25,293	1,365	5.7	10.9
Business	9,902	14,294	4,392	44.4	49.6
Home Economics	4,053	6,632	2,579	63.6	68.8
Industrial Arts	8,077	11,198	3,121	38.6	43.8
Art	4,831	6,467	1,636	33.8	39.0
Music	4,203	5,113	910	21.7	26.9
Theatre	396	856	460	116.0	121.2
Physical Education	15,878	17,693	1,815	11.4	16.6
Driver Education	2,703	2,857	154	5.6	10.8
Health	339	298	-41	-12.1	-6.9
Intern	844	1,254	410	48.5	53.7
Other	5,109	5,438	329	6.4	11.6

EXHIBIT 4

Changes in Enrollments by Department: Six-period Schools

Department	Enrollment 1981	Enrollment 1982	Difference	Percentage	Adjusted Percentage
English	29,611	29,103	-508	-1.7	1.8
Foreign Languages	11,961	12,203	242	2	5.5
Social Studies	22,929	23,313	384	1.6	5.1
Mathematics	22,386	23,610	1,224	5.2	8.7
Science	20,381	20,964	583	2.8	6.3
Business	7,116	7,552	436	5.8	9.3
Home Economics	3,234	3,057	-177	-5.8	-2.3
Industrial Arts	4,805	4,666	-139	-3	.5
Art	3,924	3,700	-224	-6	-2.5
Music	3,622	3,314	-308	-9.3	-5.8
Theatre	482	434	-48	-11.1	-7.6
Physical Education	10,908	10,966	58	1	4.5
Driver Education	2,071	1,886	-185	-8.9	-5.4
Health	575	355	-220	-38.3	-34.8
Intern	868	991	123	14.2	17.7
Other	3,360	3,535	175	5.2	8.7

Course Enrollments

Exhibits 5 and 6 present greater detail on the particular courses in which major changes in enrollments occurred between the 1981-82 and 1982-83 school years for both six- and seven-period schools. Courses listed are ones showing an enrollment increase or decrease of greater than 400 students for two-semester courses and greater than 200 students for single-semester courses. These courses account for 52 percent of the total change in enrollments for the seven-period schools and 31 percent of the total change in enrollments for the six-period schools. It should be noted that while 17 courses in seven-period schools showed increases of this magnitude, only one course, Chemistry 1, did so in the six-period schools.

Analyses by Grade Level of Students and Grade Point Average

When the data were examined by grade level (10 through 12), it was found that the shift to a seven-period day affected the course selections of 10th- and 11th- graders, but not those of 12th-graders. For 10th- and 11th-graders, there was a slight shift toward increasing the proportion of nonacademic courses under the seven-period option. This grade-level difference is explained by the fact that the older students who have generally fulfilled their academic requirements tend to take a higher proportion of nonacademic courses than the younger students, even without the seven-period option. The addition of the seventh period allows students to add electives at an earlier point in their high school careers, thus accounting for the increase in "nonacademic" courses (Exhibit 7).

Analyses by grade-point average showed that the effects of the seven-period day were the same regardless of achievement level of students. The shift toward taking a slightly greater proportion of nonacademic courses was similar for low and high achievers.

SUMMARY

It is clear from these data that the initial information provided by DEA in its preliminary report was somewhat misleading, in that those data indicated that enrollment increases were focused on the traditional academic areas. The new and more complete data suggest that while there have been substantial enrollment increases in Foreign Languages, Social Studies, Mathematics, and Science, which can probably be attributed to the seven-period day, there have been even larger increases in other types of courses as well. Students particularly benefit from the seven-period schedule through courses focusing on business and life skills, such as typing and child development lab, as well as courses which broaden students' cultural appreciation and involvement, such as art, music, and physical education.

Thus, the seven-period day apparently permits students to take a wider variety of elective courses during their high school careers. Further, given the increase in course enrollments which occurred despite a sharp drop of enrollment in the seven-period day schools, it appears that students are eager to take advantage of these opportunities when they are offered.

EXHIBIT 5

Courses Showing Major Changes in Enrollments: Seven-Period Schools*

Department	Enrollment 1981-82	Enrollment 1982-83	Difference	Percentage	Adjusted Percentage
History/Social Studies					
Law	1,078	1,509	431	40	45.2
Mathematics					
Algebra 1	2,841	3,327	486	17	22.2
Consumer Math	1,252	1,742	490	39	44.2
Algebra 2	3,936	3,540	-396	-10	-4.8
Computer Math	639	1,108	469	73	78.2
Science					
Biology 1	8,301	7,732	-569	-7	-1.8
Anatomy & Physiology	717	1,138	421	59	64.2
Business					
Exploring Business Courses	389	1,002	613	158	163.2
Typing 1	3,710	6,113	2,403	65	70.2
Accounting 1	1,149	1,641	492	43	48.2
Home Economics					
Creative Foods	550	1,188	638	116	121.2
Gourmet Foods 1	541	997	456	84	89.2
Child Development Lab 1	972	1,676	704	72	77.2
Art					
Fundamentals of Art	1,051	1,865	814	77	82.2
Industrial Art					
Mechanical Drawing 1	745	1,120	375	50	55.2
Woodworking 1	1,238	1,964	726	59	64.2
Health/P.E./Driver Ed.					
P.E. 2	3,891	4,479	588	15	20.2
P.E. 3	2,793	3,920	1,127	40	45.2
P.E. 4	1,825	2,596	771	42	47.2

*Does not include courses in the English department because the restructuring of courses between 1981-82 and 1982-83 makes comparisons impossible to do.

EXHIBIT 6

Courses Showing Major Changes in Enrollments: Six-Period Schools*

Department	Enrollment 1981-82	Enrollment 1982-83	Difference	Percentage	Adjusted Percentage
History/Social Studies					
Human Behavior	381	28	-353	-93	-89.5
Science					
Chemistry 1	3,853	4,646	793	21	24.5

*Does not include courses in the English department because the restructuring of courses between 1981-82 and 1982-83 makes comparisons impossible to do.

EXHIBIT 7

Change in Percentage of Academic and Nonacademic Courses Taken by Grade Level*

	Grade Level						Total	
	10		11		12		10, 11, 12	
	Acad.	Non-acad.	Acad.	Non-acad.	Acad.	Non-acad.	Acad.	Non-acad.
Six-period Schools								
1981-82	78	22	72	28	62	38	70	30
1982-83	78	23	73	27	64	36	72	28
Difference	0	1	1	-1	2	-2	2	-2
Seven-period Schools								
1981-82	73	27	65	35	58	42	66	34
1982-83	67	33	62	38	56	44	63	37
Difference	-6	6	-3	3	-2	2	-3	3

*Includes only Grades 10, 11, and 12

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